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2001 Dec 11

Progress Report
NAG5-7972
Testing the Physical Mechanisms of Gamma-Ray Bursts with Multi-Instrument Time-Resolved Spectroscopy
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Enclosed is the renewal proposal for the fourth year of LTSA NAG5-7972. Here, I summarize our recent progress.

We have continued the project of time-resolved spectral anayses of gamma-ray bursts observed jointly by the BATSE and the Wide-Field Camera on board BeppoSAX. We are making progress understanding the systematic differences between the two data sets. These data comprise the most important joint analysis set for our project.

In several meetings, we have reported on inital efforts to understand the blackbody portion of the time series of spectra from GRB970111. Clearly, a fading thermal component can provide a 'seed' spectrum for Compton upscattering. It is very likely the X-ray excess that has been observed previously in BATSE data alone continues into the X-ray band observed by the WFC.

We have also made progress in joint fitting of BATSE Large Area Detector and Spectroscopy Detector data with that of the Total Absorption Scintillation Calorimeter (TASC) of the EGRET experiment on CGRO. The TASC data are important to understanding the high-energy response

of the BATSE data. We have produced time-sequences of spectra for two important GRBs with data from both instruments.

The Summer Workshop on GRBs at the Aspen Center for Physics provided an opportunity for in-depth discussion of our on-going work.

To aid our effort, we continue to make improvements in our spectral analysis software, RMFIT (rewritten from WINGSPAN).

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